

# Direction Interval Retrieval with Thresholded Nudging:

## A Method For Improving the Accuracy of QuikSCAT Winds

Bryan Stiles, Brian Pollard, and Scott Dunbar

Jet Propulsion Laboratory, California Institute of Technology  
4800 Oak Grove Dr. Pasadena, CA 91109

### Abstract

The SeaWinds on QuikSCAT scatterometer (QSCAT) was developed by NASA JPL to measure the speed and direction of ocean surface winds.

The accuracy of the majority of the swath, and the size of the swath are such that QSCAT meets its science requirements despite shortcomings at certain cross track positions.

Nonetheless, it was desirable to modify the baseline processing in order to improve the quality of the less accurate

portions of the swath, in particular near the far swath and nadir.

Two disparate problems have been identified for far swath and nadir.

At far swath,

ambiguity removal skill is degraded due to the absence of inner beam measurements, limited azimuth diversity, and boundary effects.

Near nadir, due to nonoptimal measurement geometry, (fore and aft looking measurement azimuths approximately  $180^\circ$  apart) there

is a marked decrease in directional accuracy even when ambiguity removal works correctly.

Two algorithms were developed, direction interval retrieval (DIR) to address the nadir performance issue,

and thresholded nudging (TN) to improve ambiguity removal at far swath.

The two algorithms work independently, and need not be used together.

We illustrate the impact of the two techniques by exhibiting example wind fields and statistical performance

metrics with respect to ECMWF wind fields and buoy data.